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February 27, 2003

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Black Widow Pulsar Has Cocoon of Particles

REUTERS

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Feb. 27

— WASHINGTON (Reuters) - The Black Widow pulsar, a fast-spinning cosmic predator, has a cocoon of high-energy particles around it, scientists using the Chandra X-Ray Observatory reported on Thursday.

This is the first direct evidence that this cocoon exists around the pulsar, the scientists said in a statement citing findings obtained with the Chandra X-Ray Observatory, a spacecraft with an elliptical orbit around Earth.

The pulsar, which is formally known as B1957+20, appears white in an image released by NASA, and its cocoon looks red.

The Black Widow got its nickname because the high-energy cosmic radiation it emits appears to be destroying its companion star.

The Black Widow is a rotating neutron star, a dense ball of neutrons left over after a supernova explosion destroyed the rest of a star. Even among neutron stars, the Black Widow is something special: a twirling body called a millisecond pulsar that keeps spinning faster by pulling material off its companion.

The steady push of the matter drawn into the pulsar keeps spinning it ever faster, much as pushing a merry-go-round makes it go more quickly.

The Black Widow, which is probably about a billion years old, is some 5,000 light-years away from Earth. A light-year is about 6 trillion miles, the distance light travels in a year.

An image of the Black Widow is available online at <http://chandra.harvard.edu/photo/2003/b1957/index.html>.

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